



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/058,561	01/28/2002	Brian E. Jurczyk	212622	4322

23460 7590 04/24/2003

LEYDIG VOIT & MAYER, LTD
TWO PRUDENTIAL PLAZA, SUITE 4900
180 NORTH STETSON AVENUE
CHICAGO, IL 60601-6780

EXAMINER

KEITH, JACK W

ART UNIT	PAPER NUMBER
----------	--------------

3641

DATE MAILED: 04/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
10/058,561

Applicant(s)
Jurczyk et al

Examiner
Jack Keith

Art Unit
3641



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Jan 28, 2002
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-161 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claims 1-161 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ 6) ☐ Other:

Art Unit: 3641

DETAILED ACTION

Specification

1. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.
2. The specification is objected to because the font used is too small, making reading and entry of amendments difficult. A substitute specification with appropriate font as set forth in applicant's claims is required. A statement of "No new matter has been added" is also required to facilitate entry of the substitute specification.

Election/Restriction

3. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-7, 28-44 and 68-77, drawn to a process (method of producing neutrons), classified in class 376, subclass 108.
 - II. Claims 8-27 and 45-67, drawn to an apparatus/subcombination (neutron generator), classified in class 376, subclass 100.
 - III. Claims 78-118, 121-132 and 135-161, drawn to a combination (analysis system) , classified in class 376, subclass 158.

Art Unit: 3641

IV. Claims 119-120 and 133-134, drawn to a use (process of using analysis system), classified in class 376, subclass 159.

4. The inventions are distinct, each from the other because of the following reasons:

5. Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the process as claimed can be practiced by another materially different apparatus such as neutron generation system employing a solid target.

6. Inventions III/IV and II are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the details of the subcombination as separately claimed are not set forth in the combination. The subcombination has separate utility such as activation of a medical stent to prevent restenosis.

7. Inventions III and IV are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product

Art Unit: 3641

as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the process for using the product as claimed can be practiced with another materially different product, such as a neutron generator employing a solid target. Furthermore, the product as claimed can be used in a materially different process of using that product, such as activation of a medical stent to prevent restenosis.

8. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

9. Upon election of invention I only, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 1 appears to be generic):

IA. The embodiment wherein the process of generating neutrons employs a HPHRGD single cathode device to accelerate ions.

IB. The embodiment wherein the process of generating neutrons employs a HPHRGD double cathode device to accelerate ions.

Note that species IC-IH are based upon the process of generating neutrons employing a neutron generator other than a single or double cathode device.

That is from the species listed in claim 5 it is not clear whether or not a cathodic device is associated with any of the ion sources listed.

Art Unit: 3641

IC. The embodiment wherein the process of generating neutrons employs a penning ion source.

ID. The embodiment wherein the process of generating neutrons employs a plasmatron ion source.

IE. The embodiment wherein the process of generating neutrons employs a duoplasmatron ion source.

IF. The embodiment wherein the process of generating neutrons employs a radio frequency ion source.

IG. The embodiment wherein the process of generating neutrons employs a quadrapole ion source.

IH. The embodiment wherein the process of generating neutrons employs a discharge ion source.

10. Upon election of species IA only, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 1 appears to be generic):

IAa. The embodiment wherein background gas particles experience collisions with ions only and said background gas particles are situated on the surface of the vacuum chamber by chemical adsorption.

Art Unit: 3641

IAb. The embodiment wherein background gas particles experience collisions with ions only and said background gas particles are situated on the surface of the vacuum chamber by physical adsorption.

IAc. The embodiment wherein background gas particles experience collisions with fast neutral particles only and said background gas particles are situated on the surface of the vacuum chamber by chemical adsorption.

IAd. The embodiment wherein background gas particles experience collisions with fast neutral particles only and said background gas particles are situated on the surface of the vacuum chamber by physical adsorption.

11. Upon election of one of species IAa-IAd, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 1 appears to be generic):

IAe. The embodiment wherein the electron management system employs electrode surface treatment only.

IAf. The embodiment wherein the electron management system employs low secondary electron emission materials only.

IAg. The embodiment wherein the electron management system employs electrode surface treatment and low secondary electron emission materials.

Art Unit: 3641

IAh. The embodiment wherein the electron management system employs electric potential repression of the intra-cathode region to reduce secondary electron formation.

IAi. The embodiment wherein the electron management system employs baffle electrodes to minimize intra-cathode region errant particle and electron paths.

IAj. The embodiment wherein the electron management system employs the placement of surfaces to promote electron-ion recombination within the intra-cathode region.

12. Upon election of one of species IAe-IAj, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 1 appears to be generic):

IAk. The embodiment wherein the cathode employs only a semi-transparent surface.

IAI. The embodiment wherein the cathode employs a semi-transparent surface and non-transparent surface.

13. Upon election of one of species IAk or IAI, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 1 appears to be generic):

Art Unit: 3641

IAm. The embodiment wherein the anode electrode is employed as the vacuum chamber inner surface.

IAn. The embodiment wherein the anode electrode comprises openings and is semi-transparent.

14. Upon election of one of species IAm or IAn, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 1 appears to be generic):

IAo. The embodiment wherein the chamber employs gas storage and regulation mechanism (i.e., flowing gas system) for storing gas and regulating pressure of gas in the chamber.

IAp. The embodiment wherein the chamber employs gas storage and pressure regulation of said gas is done by utilizing a getter material.

15. Upon election of one of species IAo or IAp, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 1 appears to be generic):

IAq. The embodiment employing the geometry of figure 10a.

IAr. The embodiment employing the geometry of figure 10b.

IAs. The embodiment employing the geometry of figure 10c.

Art Unit: 3641

IAt The embodiment employing the geometry of figure 10d.

IAu. The embodiment employing the geometry of figure 10e.

16. Upon election of one of species IAq-IAu, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 1 appears to be generic):

IAv. The embodiment wherein the chamber employs cooling fins to remove heat from the chamber.

IAw. The embodiment wherein the chamber employs channels fins to remove heat from the chamber.

17. Upon election of one of species IAv or IAw, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 1 appears to be generic):

IAx. The embodiment wherein the gas is deuterium only.

IAy. The embodiment wherein the gas is deuterium and tritium only.

18. Upon election of species IB only, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims


Art Unit: 3641

shall be restricted if no generic claim is finally held to be allowable (currently, claim 1 appears to be generic):

IBa. The embodiment wherein background gas particles experience collisions with ions only and said background gas particles are situated on the surface of the vacuum chamber by chemical adsorption.

IBb. The embodiment wherein background gas particles experience collisions with ions only and said background gas particles are situated on the surface of the vacuum chamber by physical adsorption.

IBc. The embodiment wherein background gas particles experience collisions with fast neutral particles only and said background gas particles are situated on the surface of the vacuum chamber by chemical adsorption.

 IBd. The embodiment wherein background gas particles experience collisions with fast neutral particles only and said background gas particles are situated on the surface of the vacuum chamber by physical adsorption.

19. Upon election of one of species IBa-IBd, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 1 appears to be generic):

IBe. The embodiment wherein the electron management system employs electrode surface treatment only to augment neutron production power efficiency of the

Art Unit: 3641

process through the reduction of power consumed by the production of electrons through gaseous discharge.

IBf. The embodiment wherein the electron management system employs low secondary electron emission materials only to augment neutron production power efficiency of the process through the reduction of power consumed by the production of electrons through gaseous discharge.

IBg. The embodiment wherein the electron management system employs electrode surface treatment and low secondary electron emission materials to augment neutron production power efficiency of the process through the reduction of power consumed by the production of electrons through gaseous discharge.

IBh. The embodiment wherein the electron management system employs electric potential repression of the intra-cathode region to reduce secondary electron formation to augment neutron production power efficiency of the process through the reduction of power consumed by the production of electrons through gaseous discharge.

IBi. The embodiment wherein the electron management system employs baffle electrodes to minimize intra-cathode region errant particle and electron paths to augment neutron production power efficiency of the process through the reduction of power consumed by the production of electrons through gaseous discharge.

IBj. The embodiment wherein the electron management system employs the placement of surfaces to promote electron-ion recombination within the intra-

Art Unit: 3641

cathode region to augment neutron production power efficiency of the process through the reduction of power consumed by the production of electrons through gaseous discharge.

IBk. The embodiment wherein the electron management system employs electrode surface treatment only to augment neutron production power efficiency of the process through the reduction of power consumed by the conduction of electrons through gaseous discharge.

IBl. The embodiment wherein the electron management system employs low secondary electron emission materials only to augment neutron production power efficiency of the process through the reduction of power consumed by the conduction of electrons through gaseous discharge.

IBm. The embodiment wherein the electron management system employs electrode surface treatment and low secondary electron emission materials to augment neutron production power efficiency of the process through the reduction of power consumed by the conduction of electrons through gaseous discharge.

IBn. The embodiment wherein the electron management system employs electric potential repression of the intra-cathode region to reduce secondary electron formation to augment neutron production power efficiency of the process through the reduction of power consumed by the conduction of electrons through gaseous discharge.

IBo. The embodiment wherein the electron management system employs baffle electrodes to minimize intra-cathode region errant particle and electron paths to

Art Unit: 3641

augment neutron production power efficiency of the process through the reduction of power consumed by the conduction of electrons through gaseous discharge.

IBp. The embodiment wherein the electron management system employs the placement of surfaces to promote electron-ion recombination within the intra-cathode region to augment neutron production power efficiency of the process through the reduction of power consumed by the conduction of electrons through gaseous discharge.

20. Upon election of one of species IBe-IBp, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 1 appears to be generic):

- IBq. The embodiment employing the geometry of figure 10a.
- IBr. The embodiment employing the geometry of figure 10b.
- IBs. The embodiment employing the geometry of figure 10c.
- IBt. The embodiment employing the geometry of figure 10d.
- IBu. The embodiment employing the geometry of figure 10e.

21. Upon election of one of species IBq-IBu, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 1 appears to be generic):

- IBv. The embodiment wherein the gas is deuterium only.

Art Unit: 3641

IBw. The embodiment wherein the gas is deuterium and tritium only.

22. Upon election of species IC-IH only, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 1 appears to be generic):

Note that election of species IC-IH are only necessary if the process of generating neutrons employing a neutron generator is other than a single or double cathode device. That is from the species listed in claim 5 it is not clear whether or not a cathodic device is associated with any of the ion sources listed.

A. The embodiment wherein the gas is deuterium only.

B. The embodiment wherein the gas is deuterium and tritium only.

23. Upon election of invention II only, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 1 appears to be generic):

IIA. The embodiment wherein the process of generating neutrons employs a HPHRGD single cathode device to accelerate ions.

Art Unit: 3641

IIB. The embodiment wherein the process of generating neutrons employs a HPHRGD double cathode device to accelerate ions.

24. Upon election of one of species IIA only, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 8 appears to be generic to species IIA):

IIAa. The embodiment wherein the cathode employs only a semi-transparent surface.

IIAb. The embodiment wherein the cathode employs a semi-transparent surface and non-transparent surface.

25. Upon election of one of species IIAa or IIAb, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 8 appears to be generic to species IIA):

IIAc. The embodiment wherein the anode electrode is employed as the vacuum chamber inner surface.

IIAd. The embodiment wherein the anode electrode comprises openings and is semi-transparent.

26. Upon election of one of species IIAc or IIAd, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which

Art Unit: 3641

the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 8 appears to be generic to species IIA):

IIAe. The embodiment wherein the chamber employs gas storage and regulation mechanism (i.e., flowing gas system) for storing gas and regulating pressure of gas in the chamber.

IIAf. The embodiment wherein the chamber employs gas storage and pressure regulation of said gas is done by utilizing a getter material.

27. Upon election of one of species IIAe or IIAf, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 8 appears to be generic to species IIA):

IIAg. The embodiment wherein the chamber employs cooling fins to remove heat from the chamber.

IIAh. The embodiment wherein the chamber employs channels fins to remove heat from the chamber.

28. Upon election of one of species IIAg or IIAh, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 8 appears to be generic to species IIA):

IIAi. The embodiment employing the geometry of figure 10a.

Art Unit: 3641

IIAj. The embodiment employing the geometry of figure 10b.

IIAk. The embodiment employing the geometry of figure 10c.

IIAl The embodiment employing the geometry of figure 10d.

IIAm. The embodiment employing the geometry of figure 10e.

29. Upon election of one of species IIAi-IIAm, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 8 appears to be generic to species IIA):

IIAn. The embodiment wherein the electron management system employs electrode surface treatment only.

IIAo. The embodiment wherein the electron management system employs low secondary electron emission materials only.

IIAp. The embodiment wherein the electron management system employs electrode surface treatment and low secondary electron emission materials.

IIAq. The embodiment wherein the electron management system employs electric potential repression of the intra-cathode region to reduce secondary electron formation.

IIAr. The embodiment wherein the electron management system employs baffle electrodes to minimize intra-cathode region errant particle and electron paths.

Art Unit: 3641

IIAs. The embodiment wherein the electron management system employs the placement of surfaces to promote electron-ion recombination within the intra-cathode region.

30. Upon election of one of species IIAn-IIAs, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 8 appears to be generic to species IIA):

IIAt. The embodiment wherein the gas is deuterium only.

IIAu. The embodiment wherein the gas is deuterium and tritium only.

31. Upon election of one of species IIB only, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 45 appears to be generic to species IIB):

IIBa. The embodiment wherein the electron suppressor cathode employs only a semi-transparent surface.

IIBb. The embodiment wherein the electron suppressor cathode employs a semi-transparent surface and non-transparent surface.

32. Upon election of one of species IIBa or IIBb, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which

Art Unit: 3641

the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 45 appears to be generic to species IIB):

IIBc. The embodiment wherein the leeching cathode employs only a semi-transparent surface.

IIBd. The embodiment wherein the leeching cathode employs a semi-transparent surface and non-transparent surface.

33. Upon election of one of species IIBc or IIBd, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 45 appears to be generic to species IIB):

IIBe. The embodiment wherein the anode electrode is employed as the vacuum chamber inner surface.

IIBf. The embodiment wherein the anode electrode comprises openings and is semi-transparent.

34. Upon election of one of species IIBe or IIBf, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 45 appears to be generic to species IIB):

Art Unit: 3641

IIBg. The embodiment wherein the chamber employs gas storage and regulation mechanism (i.e., flowing gas system) for storing gas and regulating pressure of gas in the chamber.

IIBh. The embodiment wherein the chamber employs gas storage and pressure regulation of said gas is done by utilizing a getter material.

35. Upon election of one of species IIBg or IIBh, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 45 appears to be generic to species IIB):

IIBi. The embodiment wherein the chamber employs cooling fins to remove heat from the chamber.

IIBj. The embodiment wherein the chamber employs channels fins to remove heat from the chamber.

36. Upon election of one of species IIBi or IIBj, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 45 appears to be generic to species IIB):

IIBk. The embodiment employing the geometry of figure 10a.

IIBl. The embodiment employing the geometry of figure 10b.

IIBm. The embodiment employing the geometry of figure 10c.

Art Unit: 3641

IIBn The embodiment employing the geometry of figure 10d.

IIBo. The embodiment employing the geometry of figure 10e.

37. Upon election of one of species IIBk-IIBo, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 45 appears to be generic to species IIB):

IIBp. The embodiment wherein the electron management system employs electrode surface treatment only.

IIBq. The embodiment wherein the electron management system employs low secondary electron emission materials only.

IIBr. The embodiment wherein the electron management system employs electrode surface treatment and low secondary electron emission materials.

IIBs. The embodiment wherein the electron management system employs electric potential repression of the intra-cathode region to reduce secondary electron formation.

IIBt. The embodiment wherein the electron management system employs baffle electrodes to minimize intra-cathode region errant particle and electron paths.

IIBu. The embodiment wherein the electron management system employs the placement of surfaces to promote electron-ion recombination within the intra-cathode region.

Art Unit: 3641

38. Upon election of one of species IIBp-IIBu, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 45 appears to be generic to species IIB):

IIBv. The embodiment wherein the gas is deuterium only.

IIBw. The embodiment wherein the gas is deuterium and tritium only.

39. Upon election of one of species IIBv or IIBw, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 45 appears to be generic to species IIB):

IIBx. The embodiment employing the power supply system of figures 23-25.

IIBy. The embodiment employing the power supply system of figure 26.

40. Upon election of invention III only, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, no claims are generic to invention III):

Art Unit: 3641

IIIA. The embodiment wherein the neutron generator is employed in a self contained potable, bulk material on-line analyzer measuring elemental content and determining physical properties of subject material.

IIIB. The embodiment wherein the neutron generator is employed in a security and contraband inspection system.

IIIC. The embodiment wherein the neutron generator is employed in a self contained potable system for analysis of environment and soil samples.

IIID. The embodiment wherein the neutron generator is employed in a portable medical system for diagnostic imaging and radiation therapy.

41. Upon election of one of species IIIA only, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 78 appears to be generic to species IIIA):

IIIAa. The embodiment wherein the neutron generator is a HPHRGD single cathode device.

IIIAb. The embodiment wherein the neutron generator is a HPHRGD double cathode device.

42. Upon election of one of species IIIAa or IIIAb, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which

Art Unit: 3641

the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 78 appears to be generic to species IIIA):

IIIAc. The embodiment wherein the radiation detector provides for spatial imaging only.

IIIAd. The embodiment wherein the radiation detector provides for the detection of prompt and delayed radiation only.

III Ae. The embodiment wherein the radiation detector provides for detection of gamma rays only.

III Af. The embodiment wherein the radiation detector provides for detection of reflected neutrons from the subject material only.

III Ag. The embodiment wherein the radiation detector provides for detection of scattered neutrons from the subject material only.

III Ah. The embodiment wherein the radiation detector provides for detection of thermalized neutrons from the subject material only.

III Ai. The embodiment wherein the radiation detector provides for detection of attenuated neutrons from the subject material only.

43. Upon election of one of species IIIAc-III Ai, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 78 appears to be generic to species IIIA):

Art Unit: 3641

III Aj. The embodiment wherein the subject material is moved by conveyor belt.

III Ak. The embodiment wherein the subject material is moved by piping.

III Al. The embodiment wherein the subject material is moved by ducting.

III Am. The embodiment wherein the subject material is moved by chutes.

44. Upon election of species III Aj only, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 78 appears to be generic to species III A):

III Aja. The embodiment of figure 43.

III Ajb. The embodiment of figure 44.

III Ajc. The embodiment of figure 46.

III Ajd. The embodiment of figure 48.

III Aje. The embodiment of figure 49.

45. Upon election of one of species III Ak-III Am only, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 78 appears to be generic to species III A):

III AA. The embodiment of figure 45.

III AB. The embodiment of figure 47.

Art Unit: 3641

46. Upon election of one of species IIIAj-IIIAm, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 78 appears to be generic to species IIIA):

IIIAn. The embodiment wherein the application is coal analysis.

IIIAo. The embodiment wherein the application is metal mining quality analysis.

IIIAp. The embodiment wherein the application is industrial mineral mining quality analysis.

IIIAq. The embodiment wherein the application is cement and concrete preparation.

IIIAr. The embodiment wherein the application is metal fabrication and recycling.

IIIA s. The embodiment wherein the application is petrochemical processing analysis.

IIIAt. The embodiment wherein the application is fertilizer manufacture.

IIIAu. The embodiment wherein the application is paper pulp processing.

IIIAv. The embodiment wherein the application is explosive manufacturing.

47. Upon election of one of species IIIAn-IIIAv only, the applicant is further required to elect a single species of the following under 35 USC 121 for the purpose of examination. This

Art Unit: 3641

additional requirement is to facilitate examining due to the broad range of determining properties of the subject material:

III Ax. Elect the determining property for subject material from those listed in claim 100. For example: The single species of density only as the determining property of the subject material.

Note that an open-ended election (i.e., comprising) for a single species election is considered to be non-responsive.

48. Upon election of species III An only, the applicant is further required to elect a single species of the following under 35 USC 121 for the purpose of examination. This additional requirement is to facilitate examining due to the broad range of determining properties in the coal quality analysis:

III Ana. Elect the determining property for the coal quality analysis from those listed in claim 101. For example: The single species of heating value only as the determining property of the coal quality analysis.

Note that an open-ended election (i.e., comprising) for a single species election is considered to be non-responsive.

49. Upon election of species III Aq only, the applicant is further required to elect a single species of the following under 35 USC 121 for the purpose of examination. This additional requirement is to facilitate examining due to the broad range of determining properties in the cement and concrete preparation:

Art Unit: 3641

IIIAqa. Elect the determining property for the cement and concrete preparation from those listed in claim 104. For example: The single species of sand quality and concentration only as the determining property of the cement and concrete preparation.

Note that an open-ended election (i.e., comprising) for a single species election is considered to be non-responsive.

50. Upon election of one of species IIIB only, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 110 appears to be generic to species IIIB):

IIIBa. The embodiment wherein the neutron generator is a HPHRGD single cathode device.

IIIBb. The embodiment wherein the neutron generator is a HPHRGD double cathode device.

51. Upon election of one of species IIIBa or IIIBb, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 110 appears to be generic to species IIIB):

IIIBc. The embodiment wherein the radiation detector provides for spatial imaging only.

Art Unit: 3641

IIIBd. The embodiment wherein the radiation detector provides for the detection of prompt and delayed gamma radiation only.

IIIBe. The embodiment wherein the radiation detector provides for detection of neutrons only.

52. Upon election of one of species IIIBc-IIIBe, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 110 appears to be generic to species IIIB):

IIIBf. The embodiment of figure 2.

IIIBg. The embodiment of figure 49.

53. Upon election of one of species IIIBf of IIIBg, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 110 appears to be generic to species IIIB):

IIIBh. The embodiment wherein the neutron generator produces a linear neutron distribution only.

IIIBi. The embodiment wherein the neutron generator produces a planar neutron distribution only.

54. Upon election of one of species IIIC only, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which

Art Unit: 3641

the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 126 appears to be generic to species IIIC):

IIICa. The embodiment wherein the neutron generator is a HPHRGD single cathode device.

IIICb. The embodiment wherein the neutron generator is a HPHRGD double cathode device.

55. Upon election of one of species IIICa or IIICb the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 126 appears to be generic to species IIIC):

IIICc. The embodiment of figure 45.

IIICd. The embodiment of figure 50.

56. Upon election of one of species IIICd only, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 126 appears to be generic to species IIIC):

IIICda. The embodiment wherein the mobile platform is manned.

IIICdb. The embodiment wherein the mobile platform is unmanned.

57. Upon election of one of species IIICc or IIICd, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which

Art Unit: 3641

the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 126 appears to be generic to species IIIC):

IIICe. The embodiment wherein the neutron generator produces a linear neutron distribution only.

IIICf. The embodiment wherein the neutron generator produces a planar neutron distribution only.

58. Upon election of one of species IIID only, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 144 appears to be generic to species IIID):

IIIDa. The embodiment wherein the neutron generator is a HPHRGD single cathode device.

IIIDb. The embodiment wherein the neutron generator is a HPHRGD double cathode device.

59. Upon election of one of species IIIDa or IIIDb, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, claim 144 appears to be generic to species IIID):

IIIDc. The embodiment of figure 51.

IIIDe. The embodiment of figure 52.

Art Unit: 3641

IIIDf. The embodiment of figure 53.

60. Upon election of one of species IIIDc-IIIDf identified above, the applicant is further required to elect a single species of the following under 35 USC 121 for the purpose of examination. This additional requirement is to facilitate examining due to the broad range of materials or compositions that can be included as applicant's neutron sensitive material:

IIIDg. Elect the neutron sensitive material. For example: The single species of Boron-10 only as the neutron sensitive material.

Note that an open-ended election (i.e., comprising) for a single species election is considered to be non-responsive.

61. Upon election of one of species IV only, the applicant is further required under 35 U.S.C. 121 to elect one of the following disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable (currently, no claims are generic to species IV):

IVA. The embodiment wherein the airport luggage is the inspected material (claims 110 and 119).

IVB. The embodiment wherein the parcel and packages are the inspected material (claims 110 and 120).

IVC. The embodiment wherein the landmines are the detected material (claims 126 and 133).

Art Unit: 3641

IVD. The embodiment wherein the soil is the inspected material for agricultural evaluation/treatment (claims 126 and 134).

62. Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

63. Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

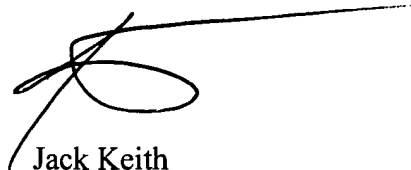
Art Unit: 3641

64. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

65. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jack Keith whose telephone number is (703) 306-5752. The examiner can normally be reached on Monday through Friday from 7:00 to 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Carone, can be reached on (703) 306-4198. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-7687.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1113.

A handwritten signature in black ink, consisting of a stylized 'J' and 'K' followed by a horizontal line extending to the right.

Jack Keith
Examiner,
Art Unit 3641

jwk

April 21, 2003